

Does an imagined movement regime improve dexterity following conservatively managed distal radius fractures in older adults? A pilot randomised controlled trial.

Date: 21st July 2017

Research Proposal- Thomas Hughes

Title: Does an imagined movement regime improve dexterity following conservatively managed distal radius fractures in older adults? A pilot randomised controlled trial.

Introduction:

Distal radius fractures, (DRFs) are common, estimated at 71,000 a year in Britain in a prospective, multi-centred survey undertaken in 1997/8, (O'Neill et al., 2001). A recent literature review, (MacIntyre and Dewan, 2016), suggests that DRF frequency appears to be increasing worldwide.

A survey undertaken in Nottingham, (Moore and Leonardi-Bee, 2008), reported that at 1 year following DRF 63% of subjects had pain, 11% had moderate to very severe pain, (visual analogue scale). The same study reported 95% of subjects had some functional difficulty, 16% moderate to very severe difficulty, as measured with the disabilities of the arm shoulder and hand (DASH), outcome measure. This suggests that some patients may encounter some problems in recovery following this injury.

The incidence of complex regional pain syndrome, (CRPS) in the conservatively managed DRF population has been reported as 32.2%, (Jellad, Salah and Frih, 2014). This study uses recognised criteria for diagnosing CRPS which gives the reader increased confidence that the diagnosis is correct, (Laver-Fawcett, 2007).

In a rigorous, systematic Cochrane review, (O'Connell et al., 2013), a graded motor imagery programme is suggested to reduce pain and improve function in adults with CRPS. It is further suggested that the somatosensory cortex, (SSC) is negatively affected by CRPS, (Di Pietro et al. 2013), and that imagery programmes, (which include imagined movements), may positively influence the SSC, (Moseley, 2004 and Priganc and Stralka, 2011).

It has been reported in several non-randomised controlled trials that immobilisation of the upper limb in healthy individuals may negatively affect the SSC. This was illustrated by reduced tactile perception and reduced activation of the SSC, (Lissek et al., 2009), and impaired laterality recognition, (Toussaint and Meugnot, 2013, Meugnot et al., 2015 and Meugnot and Toussaint, 2015). Decreased cortical excitability has been demonstrated using trans-cranial magnetic stimulation and electromyography in non-randomised controlled trial, (Kaneko et al., 2003), where eight orthopaedic patients, (injuries not recorded), were immobilised in a DRF-type cast and compared to healthy individuals. Changes in intra-cortical inhibition and facilitation were demonstrated in a small study investigating 9 immobilised subjects with distal radius fractures, (Zanette et al., 2004). These changes could demonstrate a change in the SCC. A small, pilot randomised controlled trial, (RCT), (Frenkel et al., 2014), immobilised healthy individuals for three weeks and found that 15 minutes of imagined wrist movement each day preserved wrist extension and ulnar deviation range of motion. The authors recommend that imagined movement should be studied in orthopaedic rehabilitation.

No studies investigating imagined movements in subjects with distal radius fracture were identified in a search using a systematic approach, (appendix 1). There are two current studies, (Broekstra and Stenekes, 2015 and Schott and Korbus, 2014), that are investigating imagined movements in the distal radius population but these have yet to be published. The methodology and the exact motor imagery programmes for the intervention group are unclear. One commonality is that both studies are only using female subjects. When examining the local metrics at Aneurin Bevan University Health-Board, (ABUHB), approximately 20% of this population are male. It is suggested that although relatively small, this group should be included to more closely represent the population of interest. It is suggested that this could be addressed in this proposed study.

The Purdue pegboard was designed to assess manipulative dexterity, (Tiffin and Asher, 1948). In a systematic review the Parkinson evidence database to guide

effectiveness task force, (Kegelmeyer et al., 2014), recommends the Purdue pegboard to measure fine motor activity and dexterity in Parkinson's disease. Its application in assessing the dexterity of neurologically impaired subjects suggests it is suitable for use in this trial as a measure of motor control/ SSC function.

In summary, it is suggested that DRFs are common and immobilisation for conservative treatment may cause changes in the SSC. The SSC may be positively influenced by imagined movements. No studies were identified which investigate this topic using recognised outcome measures for pain and dexterity.

Study Objectives

The aim is to undertake a pilot RCT to investigate whether an imagined movement regimen improves dexterity in conservatively managed DRFs in adults over 50, when compared to control.

Other objectives are:

- 1) To assess dexterity using the Purdue pegboard in adults over 50 years old with conservatively managed DRFs, following an imagined movement regimen when compared to control.
- 2) To evaluate pain using a visual analogue scale, (VAS) in adults over 50 years old with conservatively managed DRFs, following an imagined movement regimen when compared to control.
- 3) To evaluate active range of motion using goniometry in adults over 50 years old with conservatively managed DRFs, following an imagined movement regimen when compared to control.
- 4) To test research procedures in the same study, and highlight any specific problems.

Study Plan

Design

When examining a new treatment, a randomised controlled trial can be considered to produce the best level of evidence, (Aveyard, 2014). Randomising reduces selection bias and increases the chances of the control and intervention groups being similar to each other, (May, 2011 and Denscombe, 2010). Controlling the extraneous variables, and having a control group attempts to isolate the intervention and its relationship on outcome, (Bowling, 2014). Due to costs the assessor cannot be blinded to the group allocation. This is recognised as a potential source of bias but is unavoidable in this pilot study.

Sample

Subjects will be recruited from two of the local Accident and Emergency departments on their initial visit with DRF. The inclusion and exclusion criteria are tabulated in appendix 2.

Number of participants:

It is difficult to predict how many participants will be available that meet the criteria. An aim of this pilot study is to test procedure, this includes recruitment. Generally it's preferable to have more subjects in a study, (Blaxter, Hughes and Tight, 2010), however the numbers need to be manageable, (Denscombe 2010). Metrics from the two sites between April and September 2016 shows an average of 33 patients with DRF over the age of 50 per month. There tends to be a higher frequency of DRF due to falls in the winter months, (MacIntyre and Dewan, 2016), therefore this may be a conservative estimate. If we allow for subjects declining to participate or not meeting criteria, (estimate 25%), and factor in a drop-out rate of 20%, (drop-out rates reported to be over 20% in 18% of RCTs, Wood, White and Thompson, 2004), this could result in a sample size of approximately 20 per month. If recruitment runs for 2 months, (see appendix 3), that could lead to approximately 40 subjects, 20 in each group.

Procedures:

See appendix 4 for flow chart of how subjects move through the study.

At initial attendance in Accident and Emergency, subjects that meet the inclusion criteria will be offered an information sheet, (appendix 5) and will be asked whether they want to be included in the trial. If they agree, a consent form regarding being contacted about the study, (appendix 6), and an assessment form, (appendix 7) will be completed by the advanced nurse practitioner. The forms will be given to the primary researcher and filed securely to comply with The Data Protection Act, (1998). All patients, including those who do not wish to participate or don't meet the criteria will be given the standard advice and exercise booklet, (appendix 8 without italic section). This is usual for this group of patients.

The lead researcher will contact each subject within 3 days to discuss the study, and arrange an appointment at 7-10 days to begin the study. This is necessary ethically in order to provide a 'cooling-off' period for the subjects to consider whether they wish to participate. It will also give time for radiology reports to be completed and any subjects with discounted radius fracture can be excluded.

Potential subjects attending the initial appointment at 7-10 days will be offered the full consent form, (appendix 9). Those that do not attend or do not consent will be referred back to Accident and Emergency and return to usual care. Those that consent will be randomised into control or intervention group using a computerised random number generator. The control group will continue with maintenance exercises. The intervention group will have the same exercises as the control group plus imagined wrist exercises, (appendix 8 including italic section). The exercises will be taught to the subject by reading through the booklet with them, this ensures the advice is standardised. As the intervention is targeting the SSC, high frequency is considered important, (Magill and Anderson, 2014). The imagined movement programme, is amalgamated from that described by Moseley (2004) and Frenkel et al., (2014), and will consist of imagined wrist movement in all planes. The frequency of 15 minutes every waking hour, (Moseley, 2004), is deemed impractical and, as previously mentioned, 15 minutes of mental practice a day preserved range of motion, (Frenkel et al., 2014). Therefore approximately 10-15 minutes, four times a day has been selected as a pragmatic compromise and mirrors routine advice.

An appointment will be arranged as soon as is practically possible, aiming for the same day or day after removal of plaster at approximately 4-8 weeks, (varies between teams). This is to reduce the chance of movement out of plaster affecting the outcome measures.

Outcome Measures

The primary outcome measures of dexterity using the Purdue peg-board, and secondary outcome measures of pain and active wrist range of motion will be measured and recorded, (see appendix 10). The Purdue peg-board will be used as per standardised procedure, (Lafayette, 2002). It has established reliability and validity, (albeit not in this specific population, Yancosek and Howell, 2009), and normative data, (Tiffin and Asher, 1948). It is used in this study to measure fine finger-tip dexterity which could be influenced by changes in the SSC. The Visual Analogue Scale for pain is widely used in research and clinical trials to measure pain, (Paul-Dauphin, 1999) and has reported reliability in a range of patient groups including acute pain, (Bijur, Silver and Gallagher, 2001). Goniometry is widely used in research to measure joint movements and has reported reliability and validity, (Gajdosik and Bohannon, 1987, Horger, 1990, and Carter et al., 2009).

Analysis

Demographic data will be correlated and compared across groups using descriptive statistics, (Blaxter, Hughes and Tight, 2010). The data will be compared using inferential statistics to establish whether the groups were similar, (Denscombe, 2010). The outcome measures being used produce ordinal/ratio data and inferential statistics will be used to see if there is a difference between the control and intervention groups. It is recognised that the sample size will be too small to determine statistical significance, (Suresh and Chandrashekara, 2012), but the study will collect data and test processes that could be used in a full study.

Ethics

Benefits and risks are included in the participant information sheet, (appendix 5). The subjects will be fully informed of the intervention, their commitment and that they can leave at any time. Subjects who do not consent will be discharged from the study and return to usual care through accident and emergency. Usual care is that patients are normally referred to physiotherapy after removal of plaster, (it is worth noting that some patients are not referred). All subjects will have 2 additional appointments compared to usual care, one at day 7-10, and one for their final assessment. This will incur time and costs to each subject, but it may benefit them as they will see a Physiotherapist and could discuss any concerns and have their exercises reinforced. Subjects will also commence their physiotherapy treatment approximately 1 week earlier than usual which may be seen as a benefit. The subject is informed of this in the information sheet.

University of Derby Health and Social Care Research Ethics Committee have approved the proposal and this proposal is being submitted as part of the IRAS process for NHS REC approval.

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Appendix 1. Literature search strategy.

Subject terms: ("motor imagery" OR imagined OR mental OR thought OR think) AND (hand OR wrist) AND (all text) (immobilisation OR static OR plaster OR splint OR fracture) NOT (CRPS OR "complex regional pain").

When fracture OR radius was added, no further articles were identified, it was therefore omitted from the search and the research question for this review became, does motor imagery/imagined movement improve outcome following wrist immobilisation?

Inclusion criteria:

- Any article that explores the use of motor imagery/imagined movements with immobilised hand/s or wrist/s
- Written in English language.
- Human.
- Published in a peer reviewed journal.

Exclusion criteria:

- Not English language.
- Any article not exploring the use of motor imagery/imagined movements with immobilised hand/s or wrist/s.
- Not human.

Date published

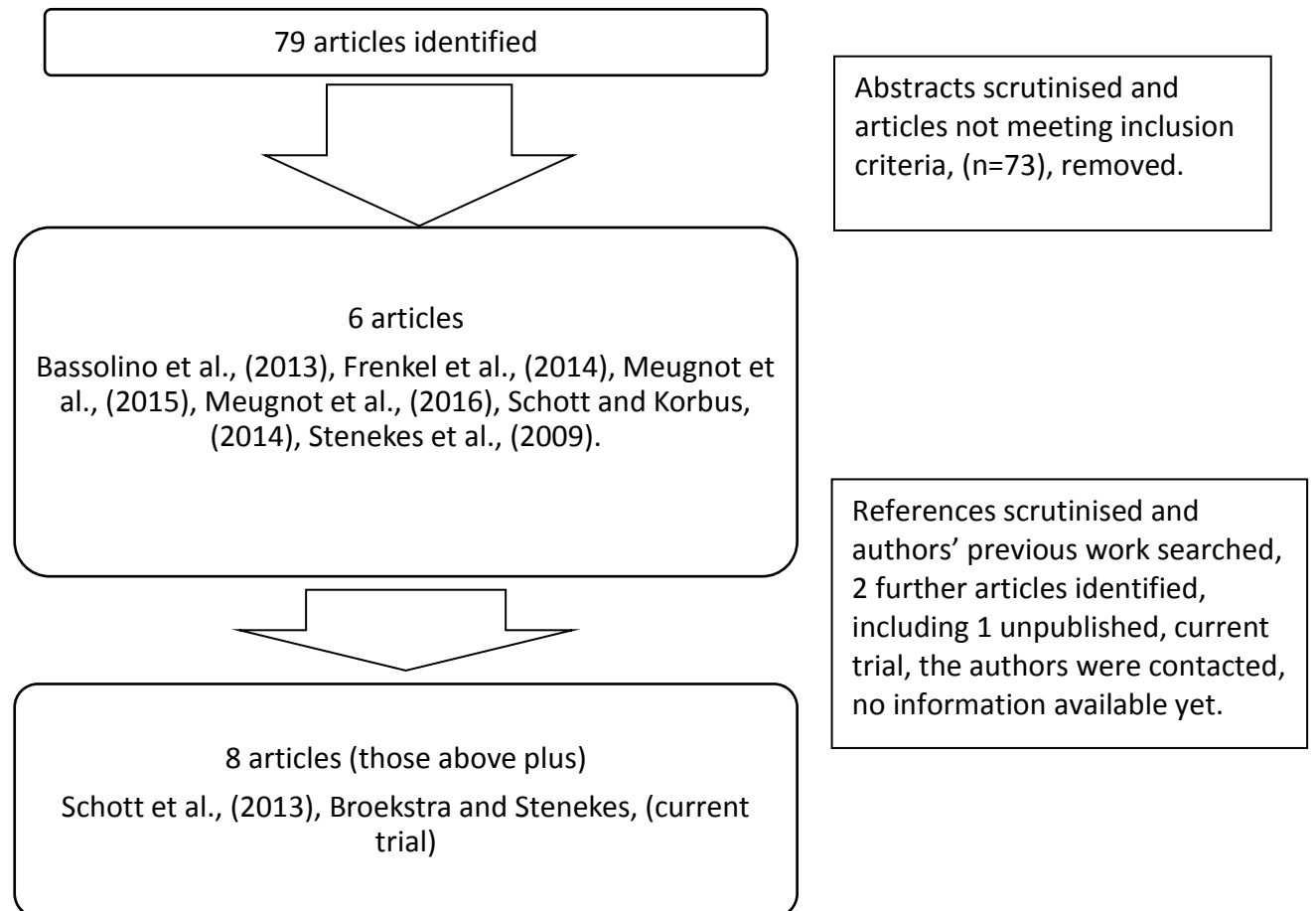
No date restrictions are applied as all articles identified are published since 1990 and as only 49 articles were identified in total it was not deemed necessary to limit by date and risk missing key articles.

Databases

Library plus and Google scholar

Further Searching

In addition to the database and journal searches, the reference lists of the identified articles and any previous work by the authors were scrutinised using the same inclusion and exclusion criteria.



Appendix 2. Inclusion and exclusion criteria and justification.

Inclusion Criteria	Justification/Reason
Age > 50	Used commonly in research, (MacIntyre and Dewan, 2016). Avoids the variable of relatively high velocity injuries sustained by the younger population influencing outcome.
Closed distal radius fracture	Population of interest. Prevents possible impact of other variables for example wound, infection, operative input.
Lives within ABUHB geographically	If subject lives outside of ABUHB geographically they may not be funded for their care and would normally be referred locally for their treatment.

Exclusion Criteria	Justification/Reason
Age < 50	See inclusion criteria (Age>50).
Lives outside ABUHB/unable to attend appointments	Would not be able to attend for intervention/assessment.
Open distal radius fracture	See inclusion criteria (closed distal radius fracture).
Subjects that require surgery	To prevent a possible impact from this variable
Subjects where a fracture is subsequently ruled out	Subject would no longer be in the population of interest.
Any additional upper limb injury	To prevent a possible impact from this variable and may prevent ability to participate in the intervention or control group.
Bilateral wrist fracture	Would prevent ability to participate in the intervention group as contralateral wrist is used.
Unable to consent (Subject lacks capacity to consent for example due to a mental health condition, learning disability, dementia or another similar condition using the Mental Capacity Act, 2005 as a guide)	Consent required to participate.
Unable to follow instructions or speak English	Would prevent ability to participate.
Pre-existing wrist injury, deformity or neurological impairment of either upper limb	To prevent a possible impact from this variable. Subject may not be able to participate.
Subject describes significant emotional and/or psychological trauma at time of injury	To reduce the subject experiencing undue stress and reduce the incidence of additional debriefing with these subjects which would

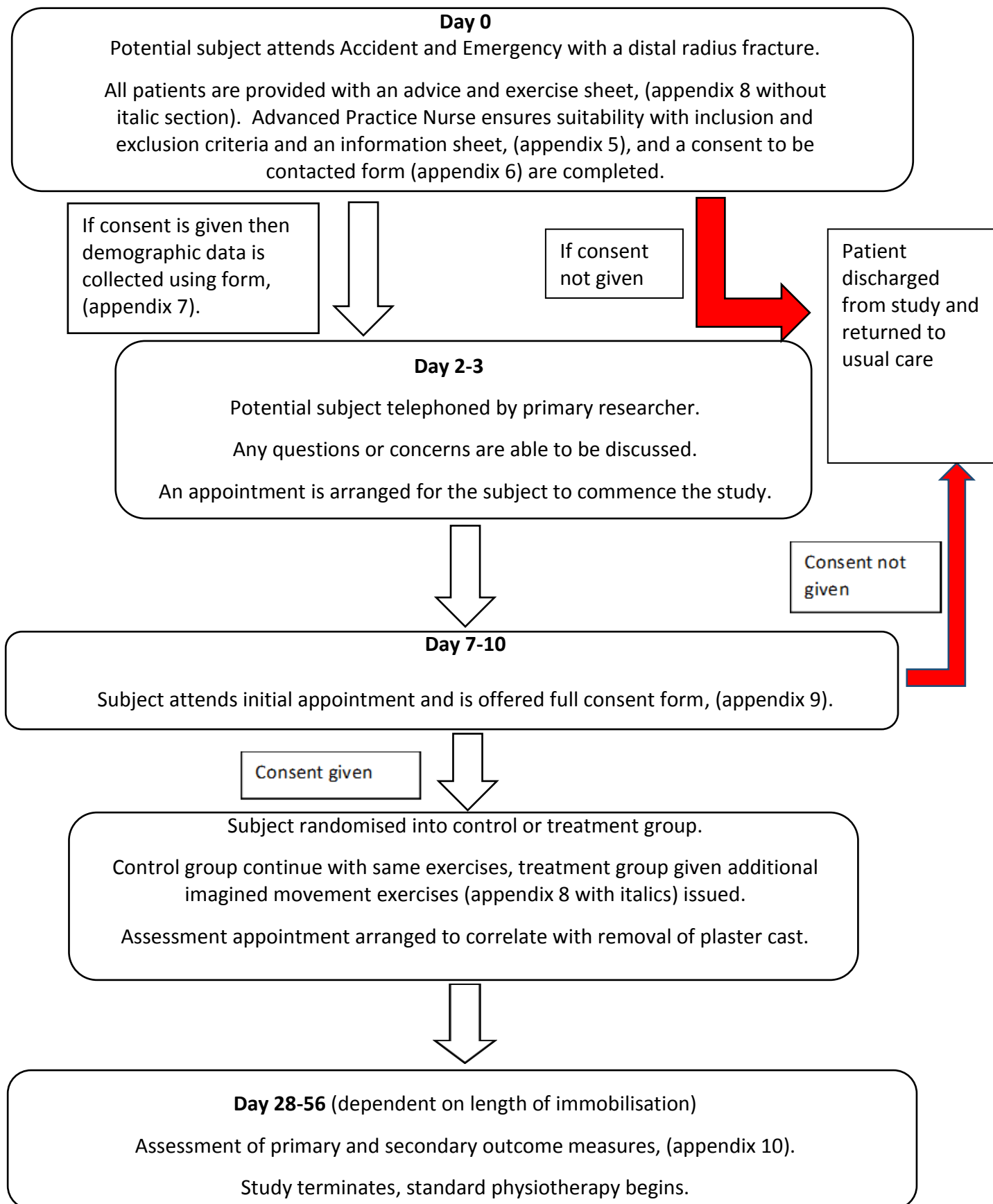
	add time to the assessments and potentially add a confounding variable to the study
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Appendix 3. Planned time line for study, (adjusted due to extension granted)

	July	August	Sep	Oct	Nov	Dec	Jan	Feb	March
Continue literature search and review									
Pilot (dependent on ethics)									
Recruitment									
Main data collection									
Write method section									
Data collation and analysis									
Write results section									
Write discussion and conclusion									
Complete typing, editing, binding									

May require deferring/expediting dependent on ethical approval but time scales would remain similar.

Appendix 4. Flow diagram of progress through study.





PARTICIPANT INFORMATION SHEET

STUDY TITLE

Does an imagined movement regime improve dexterity following conservatively managed distal radius fractures in older adults? A pilot randomised controlled trial.

You are being invited to take part in a research study. Please take time to read the following information carefully as it is important that you understand why the research is being done and what is involved. Feel free to discuss this with your friends and family and take your time to decide. You can then decide whether or not you wish to take part.

WHO IS ORGANISING AND FUNDING THE RESEARCH?

I am conducting this research as part of my MSc in Hand Therapy as a student of Derby University, College of Health and Social Care. Aneurin Bevan University Health Board is supporting me in terms of my time. There is no direct funding.

WHAT IS THE PURPOSE OF THE STUDY?

Patients with a broken/fractured wrist can have problems with stiffness, pain and use of their hand and arm for several months following removal of plaster. This study is investigating whether imagined movements whilst in the plaster improves your dexterity and/or reduces pain and/or improves movement. It is a randomised control trial; this means that you will be placed in either a control or experimental group.

You have been asked to participate because you have a distal radius fracture, (wrist fracture) that has been treated in plaster and you are over 50 years of age.

DO I HAVE TO TAKE PART?

Taking part in this study is entirely optional. If you do decide to take part you will be given this information sheet to keep and be asked to sign a consent form to be contacted by phone to arrange an appointment. If you decide to take part you are free to withdraw at any time and without giving a reason. Any information collected up to the point of withdrawal will be retained. This study will not prevent you from attending any hospital or physiotherapy appointments.

WHAT WILL HAPPEN TO ME IF I TAKE PART?

All participants will be contacted by telephone within 3 days of joining the study to ask if you want to be involved in the study. If you do not want to be involved you will be referred back to Accident and Emergency and return to usual care which will normally involve a physiotherapy referral after removal of your plaster. If you want to be involved an appointment will be arranged for you about 1 week after you first attended Accident and Emergency. This is an extra appointment that you would not normally have. At this appointment you will see the lead researcher who is a Clinical Specialist Physiotherapist and be asked to fill in a consent form. If you do not want to be involved you will be referred back to Accident and Emergency and return to usual care, (as described earlier). If you agree to take part you will be put into one of two groups. One group, the control group, will be taught the usual exercises to maintain the shoulder, elbow and finger movements whilst in plaster. The other group, the experimental group, will have the same exercises and some additional exercises where you imagine moving your wrist whilst it is still in plaster. Both groups will be asked to do these exercises 4 times a day. It is anticipated they will take you no more than 15 minutes each time.

A final assessment appointment will be arranged soon after your plaster is removed. At this appointment the lead researcher will measure your wrist movements, (as an angle), your pain level, (using a line scale), and your ability to manipulate small objects using a pegboard, which involves placing small pegs into holes. This should take no more than 30 minutes. These appointments can only be arranged at the Royal Gwent Hospital, Newport. This will be the end of the trial for you but you will continue to attend physiotherapy as necessary.

WHAT ARE THE POSSIBLE DISADVANTAGES AND RISKS OF TAKING PART?

As mentioned previously, you will need to attend two appointments, each lasting no more than 30 minutes. These appointments are extra compared to usual care. Unfortunately there is no funding available for your travel or time.

There is no cost to park at the hospital but parking is limited.

You may be randomised to the control group; this means that you will receive the usual exercises rather than the treatment being investigated.

There are no known risks associated with the two exercise plans.

Measuring your wrist movements and dexterity may be uncomfortable but will not be harmful as we would normally encourage early movement when the plaster is removed.

WHAT ARE THE POSSIBLE BENEFITS OF TAKING PART?

There are no intended clinical benefits to taking part in the study however you will attend physiotherapy slightly earlier than normal, this may give you the chance to ask any questions and raise any concerns you may have.

If you are in the control group you will still receive the usual exercises to ensure you are not penalised for participating.

Research is essential in ensuring we use evidence to guide our treatment. By participating you may help to improve our understanding of this topic and possibly improve future patient care.

WILL MY DETAILS BE KEPT CONFIDENTIAL?

All information collected will be kept strictly confidential, (subject to legal limitations).

Your G.P. and/or consultant will be informed if you decide to participate. Your details will be anonymised and all data will be securely stored either in locked cabinets or on a password protected computer. No personal information will be included in the writing of this study.

WHAT SHOULD I DO IF I WANT TO TAKE PART?

If you want to take part please sign the consent form so that I can contact you by phone. I will phone you within three days of your plaster being applied and you will be asked again if you are happy to take part. At the first appointment you will be asked to complete a full consent form.

WHAT WILL HAPPEN TO THE RESULTS OF THE RESEARCH STUDY?

The results of this study will be used as my dissertation for an MSc in Hand Therapy at the University of Derby. The results of this study may be published in the form of a poster at scientific conferences, no confidential information will be used. The findings may be used to guide further study which could be published in a scientific journal, if you wish to view the results please contact me using the details below.

WHO HAS REVIEWED THE STUDY?

The research has been approved by the University of Derby and NHS ethics boards.

CONTACT FOR FURTHER INFORMATION

Researcher: Tom Hughes Clinical Specialist Physiotherapist, Royal Gwent Hospital, Cardiff Road, Newport NP20 2UB (01633 234491) Email tom.hughes@wales.nhs.uk

If you have any concerns about how this research is being undertaken please contact my supervisor, Sue Kennedy, Lecturer, University of Derby, College of Health and Social Care, Kedleston Road, Derby. DE22 1GB Email S.Kennedy@derby.ac.uk

THANK YOU FOR TAKING THE TIME TO READ THIS INFORMATION SHEET.

DATE

Version 2-17



RESEARCH ETHICS: CONSENT TO BE CONTACTED FORM

Does an imagined movement regime improve dexterity following conservatively managed distal radius fractures in older adults? A pilot randomised controlled trial.

Name, position and contact address of Researcher:

Mr Tom Hughes, Clinical Specialist Physiotherapist, (hands).
Physiotherapy hand unit, physiotherapy department.
Royal Gwent Hospital
Cardiff Road
Newport
NP20 2UB

Email: tom.hughes@wales.nhs.uk

Please Initial Box

1. I confirm that I have read and understand the information sheet for the above study and have had the opportunity to ask questions.
2. I agree to be telephoned to discuss my involvement in the study and to arrange an appointment.

☐☐

Name of Participant

Date

Signature

Name of Researcher/Staff

Date

Signature

Appendix 7. Baseline demographic data form.



Subject Name	
Subject Hospital number	
Date of A&E attendance	
Subject Date of Birth	
Subject Contact Telephone number/s	

This provides enough information to ensure the correct subject is identifiable whilst not collecting unnecessary data.



***Aneurin Bevan University Health Board
Physiotherapy Directorate***

**Physiotherapy advice and
exercise booklet:**

Wrist fractures.

This booklet gives you advice on helping your wrist to recover following a wrist fracture/break. Whilst in your plaster there are some exercises you can do which may reduce stiffness and pain.

Swelling and pain

When you break your wrist it is normal to have swelling and pain. You should keep your hand elevated as much as possible. This should help with the swelling.

You may have been prescribed pain killers by a member of staff in accident and emergency. If you have any concerns or feel your pain is not under control, speak to your G.P. or pharmacist.

Exercises

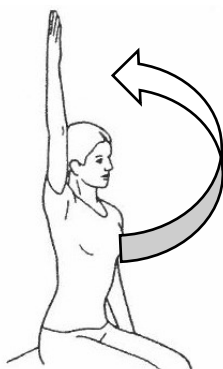
It is very important to exercise, even when your wrist is immobilised in a plaster cast. It is suggested that all of these exercises are performed 4 times a day. There is a diary at the back of this booklet for you to record when you exercise. You may also wish to set an alarm to remind you when to exercise through the day.



1) Make a fist and then straighten your fingers. Repeat 10 times.



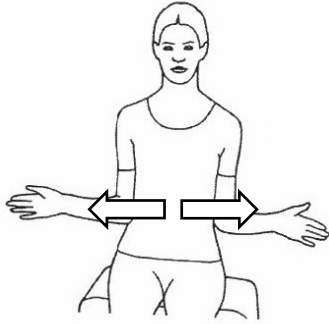
2) Make a hook/claw grip (the main knuckle joints straight with the smaller finger joints bent). Then straighten your fingers. Repeat 10 times.



3) Bring your arm forwards so that your hand goes above your head, then lower your hand. Repeat 10 times.



4) Leading with your thumb, bring your arm out to the side and above your head, then lower. Repeat 10 times.

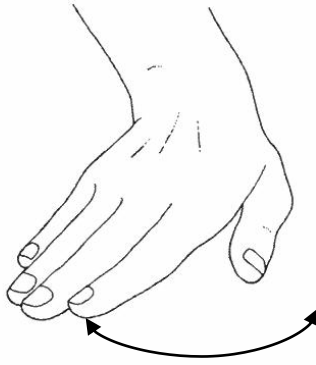


5) Keep your elbows tucked into your side. Rotate your shoulders so that your hands move away from your body.

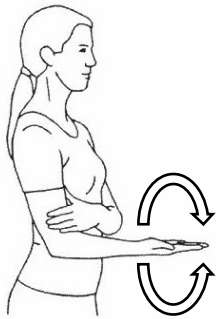
The next three exercises involve you imagining that you are moving the wrist that is in plaster. We recommend that you perform each of the exercises 3 times with your un-injured wrist so that you can see and feel how your 'normal' wrist moves. Then try to think about doing the same thing with your other wrist. You do not need to actually move your wrist in the plaster, you just need to imagine the wrist is moving. We think this may help to maintain the movement control part of your brain whilst your wrist is unable to move in the plaster cast.



Move your un-injured wrist slowly backwards and forwards 3 times. Concentrate on how the wrist moves and how it feels when it moves. Now, imagine doing the same exercise with your injured wrist 20 times.



Move your un-injured wrist slowly from side to side 3 times. Concentrate on how the wrist moves and how it feels when it moves. Now, imagine doing the same exercise with your injured wrist 20 times.



Keep your elbow tucked into your side. Move your un-injured wrist slowly so that the palm faces up and then down, 3 times. Concentrate on how the wrist moves and how it feels when it moves. Now, imagine doing the same exercise with your injured wrist 20 times.

(The section in italics is not included for the control group).

Exercise diary

Please use this chart to help you remember to exercise. Tick the relevant box each time you complete your exercises.

	Monday				Tuesday				Wednesday				Thursday			
	morning	midday	afternoon	evening	morning	midday	afternoon	evening	morning	midday	afternoon	evening	morning	midday	afternoon	evening
Week 1																
Week 2																
Week 3																
Week 4																
Week 5																
Week 6																

	Friday				Saturday				Sunday			
	morning	midday	afternoon	evening	morning	midday	afternoon	evening	morning	midday	afternoon	evening
Week 1												
Week 2												
Week 3												
Week 4												
Week 5												
Week 6												

If you have any questions about your exercises or have any concerns please contact the physiotherapy team using the details below.

Physiotherapy Hand Unit
Physiotherapy Outpatients
Royal Gwent Hospital
Cardiff Road
Newport
NP20 2UB
Tel: 01633 234491





RESEARCH ETHICS: CONSENT FORM

Does an imagined movement regime improve dexterity following conservatively managed distal radius fractures in older adults? A pilot randomised controlled trial.

Name, position and contact address of Researcher:

Mr Tom Hughes, Clinical Specialist Physiotherapist, (hands).
Physiotherapy hand unit, physiotherapy department.
Royal Gwent Hospital
Cardiff Road
Newport
NP20 2UB

Email: tom.hughes@wales.nhs.uk

Please Initial Box

- | | | |
|----|--|--------------------------|
| 1. | I confirm that I have read and understand the information sheet for the above study and have had the opportunity to ask questions. | <input type="checkbox"/> |
| 2. | I understand that my participation is voluntary and that I am free to withdraw at any time, without giving reason. However, if my data has been analysed and written up, I realise I will no longer be able to withdraw. | <input type="checkbox"/> |
| 3. | I understand my information will be anonymised and held securely | <input type="checkbox"/> |
| 4. | I agree that my GP and the orthopaedic team responsible for my care will be informed of my participation in the study. | <input type="checkbox"/> |
| 5. | I agree to take part in the above study. | <input type="checkbox"/> |

Name of Participant

Date

Signature

Name of Researcher

Date

Signature

Appendix 10. Assessment data form.



Subject Name		
Hospital number		
Subject Date of Birth		
Date		
Group allocation	Intervention	Control
Days since removal of plaster	Days	
Hand dominance	LEFT	RIGHT
Injured Hand	LEFT	RIGHT
Length of time in plaster	Weeks	
Wrist active ROM	Flexion	
	Extension	
	Radial Deviation	
	Ulnar Deviation	
	Supination	
	Pronation	
Purdue peg board score	Left	
	Right	
	Both hands	
	Left+Right+Both	
	Assembly	

Pain score



No pain at all

Worst pain imaginable

(It will be checked that this line measures 10cm when printed/photocopied)

Current medication